

NEW RODENTS FROM BRITISH EAST AFRICA

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During the year just closed the writer accompanied Mr. Paul J. Rainey's hunting party through British East Africa, for the purpose of preserving the animals obtained by the expedition. The collections thus secured have been donated by Mr. Rainey to the Smithsonian Institution, under whose auspices the natural history work was accomplished.

The collecting operations were limited chiefly to the preservation of the mammals, special attention being devoted to the collecting of the large carnivores and ungulates. The collection of mammals secured under Mr. Rainey's direction and coöperation is of immense size, the number of specimens aggregating some four thousand, more than seven hundred of which are specimens of big game. This additional material will add greatly to the facility of classifying the African collection made by the Smithsonian African Expedition under direction of Colonel Roosevelt two years ago, and which is now under investigation by the writer. It is, however, deemed advisable to publish at once any new species which may be detected while the work is in progress.

The present paper consists of descriptions of the new races of rodents found in the Rainey collection.¹ It would not, however, have been possible to determine this material without direct comparison with the types and specimens in the British Museum. For the privileges of making such comparisons the writer is under obligations to Mr. Oldfield Thomas, the curator in charge of the mammal collections. Mr. Thomas has labored with such marked success in accumulating and describing mammal material from Africa, that no satisfactory systematic work can be accomplished without direct reference to the immense collection under his charge at the Natural History Museum.

¹ For the sake of convenience a single form from Uganda is included.

PROTOXERUS STANGERI BEA, new subspecies

GIANT FOREST SQUIRREL

Type from Lukosa River, Kakumega Forest, British East Africa; adult male, number 181786, U. S. Nat. Mus.; collected by Edmund Heller, February 8, 1912; original number, 5614.

Characters.—Allied to *centricola*, and of the same size, but dorsal coloration much lighter; the rump and hind limbs bright ferruginous; head lighter purer gray; throat white, not grayish, the hairs almost wholly white, only dark at extreme base.

Coloration.—General dorsal coloration tawny-olive, becoming bright cinnamon-rufous on rump and hind limbs; crown and fore limbs tawny-olive like back, rest of head and the ears grayish; the hair everywhere on dorsal surface showing black speckling, due to annulation, the individual hairs of back black tipped, with a broad subterminal band of tawny and a black base. Sides of body like back; a broad band of gray hairs bordering belly. The under parts very thinly haired, and sharply defined on sides by the band of long gray hairs; belly ochraceous; the hair on chest and throat whitish to the roots; fore limbs tawny-ochraceous; hind limbs ochraceous-rufous. Tail above blackish, banded by fifteen transverse bands of grayish, extreme base of tail cinnamon-rufous, like rump; the individual hairs with gray tips, broad black subterminal band followed by a narrower gray band, which is succeeded by a black one of equal width and a gray basal band; tail below, without distinct transverse bands, the hairs annulated with gray and black in about equal proportion.

Measurements.—Head and body, 270 mm.; tail, 290; hind foot, 66; ear, 20. Skull: greatest length, 68; condylo-incisive length, 60.4; basilar length, 51.8; zygomatic breadth, 39.6; interorbital constriction, 20.6; nasals, 19; palatilar length, 29; palatal foramina, 4; diastema, 16.6; maxillary toothrow, 11.6; condylo-incisive length of mandible, 45.4; coronoid-angular depth of mandible, 26.

A large series of specimens from the type locality shows some variation in the depth of the general coloration, but the darkest is considerably lighter than any specimens of *centricola* examined.

GRAPHIURUS MURINUS JOHNSTONI, new subspecies

UARAGESS DORMOUSE

Type from Mt. Gargues (Uaragess), Mathews Range, British East Africa; altitude, 7000 feet; adult male, number 181787, U. S.

Nat. Mus.; collected by Edmund Heller, August 26, 1911; original number, 4114.

Characters.—Closely allied to *saturatus*, but feet wholly white; ears larger, and general tone grayer; skull differs by longer palatal foramina.

Coloration.—Dorsal coloration hair-brown; sides of head and body drab, the orbital ring and base of whiskers black; feet white; ears broccoli-brown, thinly haired; underparts buffy, chin white, the hair everywhere plumbeous at base; tail broccoli-brown above, slightly paler below, the tip white.

Measurements.—Head and body, 92 mm.; tail, 80; hind foot, 18; ear, 17. Skull: greatest length, 28.4; condylo-incisive length, 25; basilar length, 22; zygomatic breadth, 15; interorbital constriction, 5; palatilar length, 8.5; palatal foramina, 3.8; nasals, 10.5 x 3.4; diastema, 6.2; maxillary toothrow, 3.3; condylo-incisive length of mandible, 15.8; coronoid-angular depth of mandible, 7.5.

This dormouse is confined to the forested summits of the higher mountains of the Mathews range. Specimens were secured on both Uaragess and Lololokui. Named for Dr. M. E. Johnston, who accompanied the Rainey safari, and to whom the writer is indebted for much assistance.

GRAPHIURUS MURINUS ISOLATUS, new subspecies

TAITA FOREST DORMOUSE

Type from Mt. Umengo, Taita Mountains, British East Africa; altitude, 5000 feet; adult female, number 181788, U. S. Nat. Mus.; collected by Edmund Heller, November, 1911; original number, 4719.

Characters.—Closely resembling *saturatus* in color, but grayer above with larger feet and ears; skull very different, the nasals much longer, the cheek teeth decidedly heavier, and the mesopterygoid fossa and palate much wider.

Coloration.—Above Prout's brown, the median dorsal region darker, almost seal-brown; sides lighter raw umber, cheeks and lower sides bordered by ochraceous-buff; the orbital ring and base of whiskers black; ears broccoli-brown; feet chiefly white, only a median streak dark; underparts ochraceous-buff, the hair plumbeous basally, except on chin where it is uniform buffy; tail broccoli-brown above, slightly lighter below with the tip white.

Measurements.—Head and body, 95 mm.; tail, 90; hind foot, 19; ear, 16. Skull: greatest length, 28; condylo-incisive length, 24.5;

basilar length, 21; zygomatic breadth, 15.3; interorbital constriction, 4.5; nasals, 11.2 x 3.5; palatilar length, 8.9; palatal foramina, 3.2; diastema, 6; maxillary toothrow, 3.6; condylo-incisive length of mandible, 16.8; coronoid angular depth of mandible, 7.5.

This race is confined to the forested summits of the Taita Mountains.

LOPHIOMYS THOMASI, new species

UARAGESS MANED RAT

Type from Mt. Gargues (Uaragess), 6000 feet altitude, Mathews Range, British East Africa; adult male, number 181789, U. S. Nat. Mus.; collected by Edmund Heller, September 1, 1911; original number, 4206.

Characters.—Allied most closely to *ibeanus*, differing chiefly in darker and more contrasting coloration; head with median black area bounded by wide white bands above eye, which are continuous over forehead; skull nearest *ibeanus* in shape and size but mesopterygoid fossa intermediate in size between this species and *testudo*, size of antorbital foramen and granulation of maxillary as in *ibeanus*, from which it differs by thicker outer walls to antorbital foramen, larger masseteric knob and smaller palatal foramina.

Coloration.—General dorsal coloration deep black, the hairs everywhere broadly white tipped, giving a silvery effect; the sides somewhat more extensively white than the median maned area; the short haired lateral bands bordering the mane olive-drab, in marked contrast to the general coloration. Head chiefly black with two prominent wide white bands over eyes, which meet on forehead, another large white spot below eye, setting off the black eye area and the black snout; ears hidden in the hair, blackish inside, their backs and tips white. Hind and forelimbs silvered like back, the toes, however, chiefly black. Underparts grayish, the hairs extensively white tipped, the underfur smoke-gray; chin black, the throat lighter and chiefly white; tail silvered like dorsal region, the extreme tip white.

Measurements.—Head and body, 270 mm.; tail, 165; hind foot, 41; ear, 26. Skull: tip of nasals to back of interparietal, 58; condylo-incisive length, 57; basilar length, 51; zygomatic breadth, 38; interorbital constriction, 14; nasals, 20.5 x 8; height of antorbital foramen, 7; palatilar length, 27.5; palatal foramina, 10; maxillary toothrow, 13; diastema, 14.5; length of mesopterygoid fossa, 12.5;

condylo-incisive length of mandible, 40; coronoid-angular depth of mandible, 17.

Three specimens are in the collection from the type locality. They agree minutely in coloration and size. I take pleasure in naming this new race for Mr. Oldfield Thomas, to whose investigations are due the discovery and description of the great bulk of East African mammals.

OTOMYS ORESTES DOLLMANI, new subspecies

UARAGESS VELDT RAT

Type from Mt. Gargues (Uaragess), Mathews Range, British East Africa, altitude, 7000 feet; adult male, number 181790, U. S. Nat. Mus.; collected by Edmund Heller, August 27, 1911; original number, 4125.

Characters.—Closely allied to *orestes*, and having six laminae to last upper molar, but skull narrower at interorbital region, which is less beaded and arched, with markedly smaller bullae; coloration dark olive like *tropicalis*.

Coloration.—Dorsal color uniform bister, the sides lighter Vandyke brown; ears black; feet dark gray; underparts grayish, with raw umber suffusion, the hair basally plumbeous.

Measurements.—Head and body, 150 mm.; tail, 88; hind foot, 25; ear, 21. Skull: greatest length, 37.4; condylo-incisive length, 34; basilar length, 29.2; zygomatic breadth, 18.1; interorbital constriction, 4.9; nasals, 17.2 x 7; diastema, 8.5; post palatal length, 12; palatal foramina, 6.6; maxillary toothrow, 8.1 (alveolar) 7 (crowns); condylo-incisive length of mandible, 12.3; coronoid-angular depth of mandible, 13.2.

Five specimens were secured in the forests glades at the extreme summit of Mt. Uaragess. These all agree in laminar formulæ with the type. Named for Mr. Guy Dollman, who has studied extensively the collections of East African mammals at the British Museum.

DENDROMUS MESOMELAS PERCIVALI, new subspecies

UARAGESS TREE MOUSE

Type from Mt. Gargues (Uaragess), Mathews Range, British East Africa, altitude, 7000 feet; adult female, number 181791, U. S. Nat. Mus.; collected by A. Blayney Percival, August 26, 1911; Heller number, 4100.

Characters.—Closely allied to *insignis*, but differing in buffy belly and yellowish tone to upper parts, without any of the russet color so characteristic of that form; skull similar to *insignis*, but palatal foramina not elliptical, widest posteriorly and triangular in shape.

Coloration.—General dorsal coloration tawny, becoming light on the sides where it is tawny-ochraceous; median dorsal region from middle of back to base of tail marked by a wide black streak; orbital region blackish; ears broccoli-brown; feet white; underparts ochraceous-buff, the hair plumbeous basally; chin whitish, the hair light to the roots; tail broccoli-brown above, whitish below, the underside marked by a faint median dark streak separating the white, and extending nearly to the tip.

Measurements.—Head and body, 86 mm.; tail, 105; hind foot, 20; ear, 16. Skull: greatest length, 25; condylo-incisive length, 22.2; basilar length, 18.8; zygomatic breadth, 12.3; interorbital constriction, 3.3; nasals, 9 x 3; palatilar length, 10.5; palatal foramina, 5.4; diastema, 6.4; maxillary tooththrow, 4, condylo-incisive length of mandible, 14.3; coronoid-angular depth of mandible, 7.

Named for Mr. A. Blayney Percival, Game Ranger of British East Africa, to whom the writer is greatly indebted for assistance and companionship while at Mt. Uaragess.

DENDROMUS WHYTEI CAPITIS, new subspecies

LOLOLOKUI TREE MOUSE

Type from Mt. Lololokui, Mathews Range, British East Africa, altitude, 6000 feet; adult female, number 181792, U. S. Nat. Mus.; collected by Edmund Heller, September 8, 1911; original number, 4263.

Characters.—Similar to *pallescens*, but tail longer, feet larger and more whitish; skull wider interorbitally and larger toothed than *pallescens*.

Coloration.—Median dorsal color raw umber; sides lighter, tawny; feet ochraceous, the toes white; ears raw umber; hair of underparts pure silky white to the roots, in contrast to the ochraceous sides; tail uniform broccoli-brown.

Measurements.—Head and body, 60 mm.; tail, 88; hind foot, 16.5; ear, 13. Skull: greatest length, 20; condylo-basal length, 17.7; basilar length, 14.8; zygomatic breadth, 10.7; interorbital constriction, 3.2; nasals, 7 x 2.4; palatilar length, 8.2; palatal slits, 4; diastema, 5; maxillary tooththrow, 3.3; condylo-incisive length of mandible, 11.7; coronoid-angular depth of mandible, 5.6.

Only the type was secured on Lololokui. Mount Lololokui is a gigantic table mountain which has received its Samburr name, Lololokui, or head, from its commanding southern face, which rises vertically as a sheer precipice three thousand feet above the plain it dominates.

LOPHUROMYS AQUILUS MARGARETTÆ, new subspecies

UARAGESS HARSH-FURRED MOUSE

Type from Mt. Gargues (Uaragess) Mathews Range, 6000 feet altitude, British East Africa; adult male, number 181793, U. S. Nat. Mus.; collected by Edmund Heller, August 27, 1911; original number, 4126.

Characters.—Allied to *zena*, but smaller, darker colored and longer tailed; the absence of light speckling gives this race a similar dark dorsal color to *rubecula*, but it is smaller in size with darker feet; skull smaller than *zena*, with smaller teeth and bullæ and flatter interorbital region.

Coloration.—Dorsal color seal brown, the sides of head and body lighter Vandyke brown; russet speckling very slight, only evident on head and sides of body; feet hair brown; the toes and tarsal region whitish; ears blackish; underparts tawny-ochraceous, with a slight dusky clouding, sharply contrasted with the dark sides. Tail bicolor, seal brown above, below whitish.

Measurements.—Head and body, 120 mm.; tail, 80; hind foot, 21; ear, 18. Skull: greatest length, 30; condylo-incisive length, 29; basilar length, 25; zygomatic breadth, 15; interorbital constriction, 6; nasals, 12.2 x 3; palatilar length, 13.3; palatal foramina, 6.8; diastema, 8.2; maxillary toothrow, 5.3; condylo-incisive length of mandible, 20.4; coronoid-angular depth of mandible, 9.

The large series of topotypes is remarkably uniform in dorsal color and size, but shows the usual color variation of the underparts from fulvous and buffy tints to dark vermiculated patterns.

EPIMYS ALLENI KAIMOSÆ, new subspecies

KAKUMEGA PYGMY FOREST MOUSE

Type from Kaimosi, Kakumega Forest, British East Africa; adult female, number 181794, U. S. Nat. Mus.; collected by Edmund Heller, February 1, 1912; original number, 5527.

Characters.—Size of *stella*, but ears much larger and pelage longer, the dorsal area less reddish, and black orbital ring continuous with a black band to tip of snout. Skull size of *stella*, but

palatal foramina wider and extending further posteriorly; mesopterygoid fossa considerably narrower.

Coloration.—Dorsal area russet, the median region only slightly darkened by black lining; sides bright cinnamon, and contrasting sharply with the light underparts; ears blackish; tail uniform broccoli-brown; hind feet drab, the toes white; fore feet white.

Measurements.—Head and body, 86 mm.; tail, 135; hind foot, 17.5; ear, 16. Skull: greatest length, 25; condylo-basal length, 23; basilar length, 19.8; zygomatic breadth, 12.5; interorbital constriction, 4.8; nasal length, 8.8; palatilar length, 11; diastema, 7; maxillary tooththrow, 3.8; palatal foramina, 5; condylo-incisive length of mandible, 16.5; coronoid-angular depth of mandible, 7.

Two others were secured besides the type in the depths of the Kakumega Forest. This race is one of the *alleni* group which are known only in the Congo forest and its extensions. The range of this group coincides with that of the potto and the Uganda duiker, which attain their extreme eastern limit in the Kukumega Forest.

EPIMYS COUCHA NEUMANI, new subspecies

LONG-TAILED MULTIMAMMATE MOUSE

Type from Neuman's Boma, Northern Guaso Nyiro River, British East Africa; number 181795, U. S. Nat. Mus.; collected by Edmund Heller, September 26, 1911; original number, 4372.

Characters.—Similar to *panya*, but tail much longer than head and body; skull more arched at interorbital region, and bullæ smaller.

Coloration.—Dorsal area hair brown, the mid dorsal region lined heavily with black; sides buffy gray, the lower sides bordered by a buffy band; ears blackish; tail uniform broccoli-brown; feet white; underparts buffy, the hair basally plumbeous.

Measurements.—Head and body, 115 mm.; tail, 128; hind foot, 25. Skull: greatest length, 30.5; condylo-incisive length, 28.3; basilar length, 24.7; zygomatic breadth, 14.5; interorbital constriction, 4; nasals, 12.3 x 3; palatilar length, 14; palatal foramina, 7; diastema, 8.3; maxillary tooththrow, 5; condylo-incisive length of mandible, 20.2; coronoid-angular depth of mandible, 9.

Three other specimens are in the collection from the type locality, and all agree with the type in the possession of long tails.

Mr. A. H. Neuman, who has written so entertainingly about elephant hunting, lived for several years at the spot on the Guaso Nyiro, where the specimens were secured.

EPIMYS COUCHA DURUMÆ, new subspecies

SWAHILI MULTIMAMMATE MOUSE

Type from Mazeras, British East Africa; adult male; number 181796, U. S. Nat. Mus.; collected December 23, 1911, by Edmund Heller; original number, 5002.

Characters.—Closely allied to *hildebrandti*; differs in much grayer and lighter coloration, in narrower and more attenuate mesopterygoid fossa and smaller bullæ.

Coloration.—Dorsal color hair-brown, with slight black lining to mid dorsal region; sides of head and body drab gray, the lower sides bordered by a buffy streak; ears and tail broccoli-brown; feet white; underparts pearl-gray, with a faint buffy suffusion medially; hair plumbeous at base, except on chin, where it is uniform white.

Measurements.—Head and body, 135 mm.; tail, 118; hind foot, 24; ear, 19. Skull: greatest length, 32; condylo-incisive length, 31; basilar length, 27; zygomatic breadth, 15.5; interorbital constriction, 45; nasals, 13.3 × 3.5; palatilar length, 15; palatal foramina, 7.7; diastema, 8.5; maxillary toothrow, 5.4; condylo-incisive length of mandible, 22; coronoid-angular depth of mandible, 10.

A large series are in the collection from Mazeras, Mariakani and Maji-ya-chumvi. They are readily distinguished by their gray tone from a series of *hildebrandti* from the Taita district.

EPIMYS TAITÆ, new species

TAITA FOREST MOUSE

Type from Mt. Mbololo, Taita Mountains, British East Africa, 5000 feet altitude; adult male; number 181797, U. S. Nat. Mus.; collected by Edmund Heller, November 5, 1911; original number, 4611.

Characters.—Allied most closely to *peromyscus*, but much smaller in size, with shorter ears; skull differs decidedly in lacking beads to interorbital edges, which are rounded, and in the shorter palatal foramina, which reach only anterior edge of first molar.

Coloration.—Dorsal area russet, darkest medially; sides lighter cinnamon, and sharply contrasted with light underparts; ears and tail broccoli-brown; feet white; underparts whitish, with a cream-buff suffusion; the hair plumbeous basally.

Measurements.—Head and body, 105 mm.; tail, 138; hind foot, 23; ear, 19. Skull: greatest length, 29; condylo-basal length, 26; basilar length, 12.4; zygomatic breadth, 13.8; interorbital constriction, 4.3; nasals, length, 11.9; post palatal length, 10; palatal for-

amina, 6.2; maxillary toothrow, 4.5; diastema, 7.6; condylo-incisive length of mandible, 17; coronoid-angular depth of mandible, 8.2.

A large series of topotypes were secured, and others were collected on a neighboring mountain, Umengo. They inhabit only the heavy forests found on a few of the higher summits of the Taita Mountains. Geographically they are isolated by many miles of desert from their nearest allies of the highland forests of Mt. Kenia and the Kikuyu Escarpment.

ZELOTOMYS HILDEGARDÆ VINACEUS, new subspecies

TAITA BROAD-HEADED MOUSE

Type from Ndi, Mt. Mbololo, Taita Mountains, British East Africa, altitude 3000 feet; adult female; number 181798, U. S. Nat. Mus.; collected by Edmund Heller, November 4, 1911; original number, 4578.

Characters.—Similar to *hildegardæ*, differing in lighter dorsal coloration, more whitish underparts and tail, and shorter pelage; mesopterygoid fossa narrower, and incisors lighter colored.

Coloration.—Dorsal color wood brown, the median region lined sparingly with black; sides more buffy, and becoming pure buff where they meet the light underparts; feet white; ears broccoli-brown; tail white, with a narrow mid dorsal streak of drab; underparts cream-buff, the hair everywhere plumbeous basally.

Measurements.—Head and body, 117 mm.; tail, 98; hind foot, 22.5; ear, 16. Skull: greatest length, 29.2; condylo-incisive length, 29.5; basilar length, 25.7; zygomatic breadth, 16.5; interorbital constriction, 5; nasals, 11.8 x 3.2; diastema, 9.2; palatal foramina, 7.5; post palatal length, 11.4; maxillary toothrow, 5.5; condylo-incisive length of mandible, 23; coronoid-angular depth of mandible, 9.5.

Three specimens secured in the vicinity of Ndi. They agree closely with the type. In life the tail, which is quite hairless, is a delicate vinaceous-pink, and by this character alone it is readily distinguishable from *Epimys coucha hildebrandti*, with which it agrees closely in pelage and size, and with which it is associated.

THAMNOMYS DOLICHURUS LITTORALIS, new subspecies

SWAHILI TREE RAT

Type from Mazeras, British East Africa; adult male; number 181799, U. S. Nat. Mus.; collected by Edmund Heller, December 22, 1911; original number, 4949.

Characters.—Closely allied to *polionops*; differs chiefly in possession of white feet and underparts, the dorsal area lighter and less russet, and the flanks salmon-gray; size greater, skull with smaller molars; compared to *surdaster*, the skull has smaller bullæ, and a longer rostrum.

Coloration.—Dorsal coloration russet, the median region heavily black lined; rump lighter and more cinnamon in tone; head tawny-brown; sides of body and hind limbs salmon-gray, fore and hind feet white; underparts white; the hair white to the roots, tail uniform broccoli-brown.

Measurements.—Head and body, 120 mm.; tail, 160; hind foot, 23. Skull: greatest length, 31.2; condylo-incisive length, 28.3; basilar length, 24.3; zygomatic breadth, 15; interorbital constriction, 5; nasals, 11.5 x 3; post palatal length, 11.4; diastema, 8; palatal foramina, 7; maxillary toothrow, 4.5; condylo-incisive length of mandible, 19.3; coronoid-angular depth of mandible, 9.5.

The type is the only specimen secured. An examination of the members of the genus *Thamnomys* for generic characters shows that only the type species *venustus* and *rutilans* possess the extra internal cusps to the molars in a worn mature stage. It is only possible in young unworn teeth of the *dolichurus* group to distinguish the ridge which marks this cusp. The long tufted tail, and the tree dwelling habits are possessed by *Epimys nigricauda* and its allies, and the external tail characters by the *E. vereauxi* group, but the skulls of these species show no trace of the extra cusp.

LEMNISCOMYS PULCHELLUS SPERMOPHILUS, new subspecies

UARAGESS SPOTTED GRASS RAT

Type from Mt. Gargues (Uaragess) Mathews Range, British East Africa, altitude 7000 feet; adult female; number 181800, U. S. Nat. Mus.; collected by Edmund Heller, August 26, 1911; original number, 4103.

Characters.—Closely allied to *massaicus*, but dorsal coloration lighter and without rusty suffusion; foot smaller; skull differs from *massaicus* by greater concavity to the antorbital plate, and more prominent hook at the angle; teeth and bullæ larger.

Coloration.—Dorsal color dark olive, banded by ten light longitudinal bands or series of spots of ochraceous, the median lines enclosing a black stripe; head tawny-olive; ears olive, with long rusty hairs about base; sides lighter, the spots becoming wide blotches of buff, and merging into the buffy wash of the underparts;

underparts whitish, suffused by cream-buff; hairs on throat and midline of belly white to the roots; tail sharply bicolor, sepia above, buff below.

Measurements.—Head and body, 120 mm.; tail, 139; hind foot, 26; ear, 17. Skull: greatest length, 30.5; condylo-incisive length, 28.4; basilar length, 24.3; zygomatic breadth, 14.3; interorbital constriction, 5; nasals, 11.2 x 3.3; palatilar length, 13.5; palatal foramina, 6; diastema, 7.8; maxillary toothrow, 5.4; condylo-incisive length of mandible, 19.6; coronoid-angular depth of mandible, 11.4.

A large series secured in the forest near the summit of Mt. Uaragess, to which elevated region this rat is confined.

The group of *Arvicanthis*, to which the name *Lemniscomys* has been applied, can be separated from the uniformly colored species of the *abyssinicus* type by their striped or spotted coloration, and the shape of the antorbital plate, which is deeply concave in front with a prominent hook at the angle, as in *Dasymys*. This bone in the *abyssinicus* group is rounded at the angle without any concavity to its border.

PELOMYS FALLAX IRIDESCENS, new subspecies

TAITA CREEK RAT

Type from Mt. Mbololo, Taita Mountains, altitude 5000 feet; adult male; number 181801, U. S. Nat. Mus.; collected by Edmund Heller, November 5, 1911; original number, 4620.

Characters.—Allied most closely to *fallax*, but differs in the heavier dorsal stripe; strong suffusion of buffy on the chest; narrower nasals and broader interorbital region.

Coloration.—General dorsal color golden-olive, lined with black, the whole suffused by an olive-green iridescence, the median dorsal region with a well defined black streak from nape to base of tail; sides of head and body lighter golden, the color carried low down on sides, where it merges gradually into the golden-ochraceous of the chest; ears on outer side blackish, brownish within; hind feet, buffy; fore feet golden-olive; tail bicolor, black above, tawny below; underparts with chest suffused with golden-ochraceous; chin and throat whitish; the belly buff; the hair everywhere plumbeous basally.

Measurements.—Head and body, 140 mm.; tail, 140; hind foot, 31.5; ear, 18. Skull: greatest length, 36; condylo-basal length, 33.5; basilar length, 29; zygomatic breadth, 18.3; interorbital constriction, 6; nasals, 14.3 x 4; post palatal length, 12.1; palatal

foramina, 6.7; diastema, 9.8; maxillary toothrow, 7; condylo-incisive length of mandible, 22.6; coronoid-angular depth of mandible, 12.6.

It is surprising to find a form with so conspicuous a dorsal stripe living at the northern extremity of the range of the genus, with the intermediate geographical form unstriped.

A large series is in the collection from the summits of the Taita Mountains, and a few also from the base of the range where they are much rarer.

PELOMYS FALLAX CONCOLOR, new subspecies

UGANDA CREEK RAT

Type from Kiduha, Lake Mutanda, Uganda; adult male; number 11.12.3.344, Brit. Mus.; collected June 25, 1911, by Robin Kemp; original number, 2307.

Characters.—Resembling *insignatus* in lacking a dark dorsal stripe, but differs in more uniform and darker coloration to under surfaces, in narrower nasals, and longer toothrow and palatal foramina. From *iridescens* it differs in lack of the dorsal stripe, in the absence of white on throat and belly, and also in the narrower interorbital constriction, larger palatal foramina and bullæ, and shorter tail.

Coloration.—Dorsal area bister, with some black lining, the bister gradually brightening on head and sides of body to golden-olive, with but little black lining; ears blackish, the long hairs at the base rusty; feet tawny-olive, like the underparts; underparts uniformly tawny-olive, and scarcely lighter than the golden-olive of the sides, the hair plumbeous at base; tail sharply bicolor, black above, tawny-olive below.

Measurements.—Head and body, 146 mm.; tail, 137; hind foot, 29.5; ear, 18. Skull: greatest length, 36; condylo-incisive length, 33; basilar length, 29; zygomatic breadth, 17.3; interorbital constriction, 5.8; nasals, 14 x 4.5; palatilar length, 15.7; diastema, 9; palatal foramina, 7.3; maxillary toothrow, 7; condylo-incisive length of mandible, 22; coronoid-angular depth of mandible, 12.

This species is closely related to the unstriped form *insignatus* of Nyasaland, and not closely to the Taita form which is an isolated mountain species. A large series of specimens is in the British Museum from Uganda, and Lake Kivu on the western frontier of German East Africa. These specimens agree well in their uni-

formly dark underparts and lack of contrast to the color of the dorsal surfaces.

In making an examination of the specimens from Uganda, two specimens of the group known as *Mylomys*, by Thomas, were discovered. These were taken at the same locality where the present type was secured. Externally they can be recognized by their longer tails and pure white underparts, but these differences only hold good with the *fallax* group. One of the Angola species, *P. campanæ*, has an equally long tail and similar white underparts to the members of the *Mylomys* division. This species also occurs with a member of the *P. fallax* group, over part, at least, of its range. An examination of the teeth, however, shows it to be a typical *Pelomys*, with short tubercles and with the third lower molar having in the second lamina only one, the inner cusp, which is enlarged. In *Mylomys* the cusps of the cheek teeth are higher, and the M_3 has besides the inner cusp of the second lamina, a small outer one as well, but it is minute and less developed than in the *Desmomys* group. The dental characters of *Mylomys* are slight, and are not accompanied by any marked external characters. Geographically, the two groups are only known to be associated in Uganda, and it is not unlikely that we have here only a single generic type to deal with.

I am indebted to Mr. Oldfield Thomas for the privilege of describing this new race.

SACCOSTOMUS ISIOLÆ, new species

SAMBURR POUCHED RAT

Type from the Isiola River, Northern Guaso Nyiro, British East Africa; adult female; number 181803, U. S. Nat. Mus.; collected by Edmund Heller, July 1, 1911; original number, 1908.

Characters.—Similar to *mearnsi*, but differing in longer tail, darker dorsal coloration and small post palatine pits like *umbri-venter*, from which latter it differs by shorter nasals, wider inter-orbital region and longer tail; mesopterygoid fossa narrow and more acutely pointed than in any other species.

Coloration.—Dorsal color drab, the median region black lined; head and sides light drab; ears blackish; feet white; underparts pearl-gray, contrasting little with the sides; hair basally plumbeous, except on chin and fore throat, where it is white to the roots; tail bicolor, sepia above, whitish below.

Measurements.—Head and body, 128 mm.; tail, 72; hind foot, 21; ear, 20. Skull: greatest length, 35; condylo-incisive length, 33.1; basilar length, 28.9; zygomatic breadth, 17.3; interorbital constriction, 5; nasals, 14.2 x 4.1; post palatal length, 11.3; diastema, 10; palatal foramina, 7.8; maxillary toothrow, 6.4; condylo-incisive length of mandible, 23.4; coronoid-angular depth of mandible, 12.

The series of topotypes varies considerably in the intensity of the dorsal color.

CRICETOMYS GAMBIANUS RAINEYI, new subspecies

SAMBURR GIANT RAT

Type from Mt. Gargues (Uaragess), altitude 6000 feet, Mathews Range, British East Africa; adult male; number 181804, U. S. Nat. Mus.; collected by Edmund Heller, August 31, 1911; original number, 4187.

Characters.—Most closely allied to *kenyensis*, but decidedly grayer and smaller, the gray of upper parts invading belly and producing uniformity in color; ear black, in contrast to gray dorsal region; proportion of dark and light portion of tail as in *kenyensis*, but the dark base quite black; hind feet extensively white, only a narrow median streak dark; differs from *luteus* in possession of dark underparts, with a tail showing only basal one-half dark, and in being generally much grayer and smaller; skull differs from both *kenyensis* and *luteus* by short palatal foramina and diastema and narrow palate and smaller bullæ.

Coloration.—Dorsal area drab-gray, the median region lined with black; head purer drab-gray, the orbital region and ears black; hind feet lighter, the toes and sides white, only the median portion blackish; fore feet chiefly whitish; sides of head and body purer drab-gray without any black lining, and merging gradually into the somewhat lighter drab-gray underparts; hairs on throat and midline of belly drab-gray to the roots, those on the sides show plumbeous basally. Basal one-half of tail deep black all around in marked contrast to the pure white terminal half.

Measurements.—Head and body, 315 mm.; tail, 375; hind foot, 65; ear, 40. Skull: greatest length, 70.5; condylo-incisive length, 65; basilar length, 57; zygomatic breadth, 33; interorbital width, 11; nasals, 28 x 9.2; palatilar length, 33.5; palatal foramina, 6.3; diastema, 21; maxillary toothrow, 12; condylo-incisive length of mandible, 48; coronoid-angular depth of mandible, 24.

One topotype is in the collection and another specimen from a neighboring mountain (Lololokui). These agree closely with the type in color and other characters.

CRICETOMYS GAMBIANUS ENGUVI, new subspecies

TAITA GIANT RAT

Type from Mt. Umengo, Taita Mountains, British East Africa, altitude 5000 feet; adult female; number 181805, U. S. Nat. Mus.; collected by Edmund Heller, November 13, 1911; original number, 4741.

Characters.—Similar to *osgoodi*, but pelage darker and longer, and underparts less white; the chest with a dark blotch; dark basal part of tail three-fourths total length. Dorsal region color of *kenyensis*, but underparts white.

Coloration.—Dorsal area Prout's brown, merging gradually on sides to broccoli-brown, median portion black lined; ears and hind feet Prout's brown, like the back in color, the feet with whitish borders and toes; fore feet white. Underparts white, in contrast to the dark sides, the hair wholly white except on chest where it is plumbeous at base and forms a dark blotch. Basal three-fourths of tail sepia, terminal part white.

Measurements.—Head and body, 325 mm.; tail, 383; hind foot, 69; ear, 44. Skull: greatest length, 75; condylo-incisive length, 69; basilar length, 60; zygomatic breadth, 34.6; interorbital constriction, 11; nasals, 30.2 x 9.8; palatilar length, 36; palatal foramina, 8.8; diastema, 23.6; maxillary toothrow, 11.8; condylo-incisive length of mandible, 50; coronoid-angular depth of mandible, 24.6.

This is an abundant mammal in the Taita Mountains, where it lives in the forests which clothe the summits. It is used extensively by the Wataito tribe for food, and is known among them as *enguvi*. The large series in the collection shows remarkably little variation in color.

CRICETOMYS GAMBIANUS OSGOODI, new subspecies

SWAHILI GIANT RAT

Type from Mazeras, British East Africa; aged male; number 181806, U. S. Nat. Mus.; collected by Edmund Heller, December 20, 1911; original number, 7425.

Characters.—Dorsal coloration similar to *luteus*, but pelage much shorter, only 10 mm. in length on rump; underparts lighter than

luteus, pure silky white, without dark patch on chest; skull much smaller than *luteus*, with smaller bullæ and palatine foramina and narrower mesopterygoid fossa; skull wider zygomatically, with greater interorbital width than *kenyensis*.

Coloration.—Median dorsal area broccoli-brown, with slight black lining; sides of head and body fawn, in contrast to the dark median area; hind feet and rump mars-brown; the toes white; fore feet whitish, with fawn spots; ears broccoli-brown. Underparts pure silky white, in contrast to the fawn of the sides, the hairs everywhere white to the roots. Basal three-fifths of tail broccoli-brown, the terminal two-fifths white.

Measurements.—Head and body, 330 mm.; tail, 395; hind foot, 66; ear, 40. Skull: greatest length, 72.5; condylo-incisive length, 66.5; basilar length, 59.5; zygomatic breadth, 33; interorbital constriction, 10.5; nasals, 30.5 x 9.5; palatilar length, 34.8; diastema, 23; palatal foramina, 7.2; maxillary toothrow, 11.5; condylo-incisive length of mandible, 48; coronoid-angular depth of mandible, 23.2. Skull aged, the incisors being much shortened by wear, the points of the lower pair worn down horizontally, the whole of the usual vertical cutting points having been worn away. Three other specimens from Mazeras agree with the type in coloration and length of pelage. Named for Mr. Wilfred H. Osgood, to whose work on the mammals of British East Africa the writer is indebted for much assistance.

THRYONOMYS GREGORIANUS PUSILLUS, new subspecies

TAITA LESSER CANE RAT

Type from Ndi, Mt. Mbololo, British East Africa; adult female; number 181807, U. S. Nat. Mus.; collected by Edmund Heller, November 3, 1911; original number, 4853.

Characters.—Allied to *gregorianus*, but decidedly smaller and more grayish in coloration, with very little rusty suffusion; skull without post-orbital notch, the sides of the frontals straight, nasals narrow, maxillary tips projecting far posteriorly into frontals, cheek teeth and palate narrow; the skull approaches nearer *harrisoni*, but teeth, palate, and nasals much narrower.

Coloration.—General dorsal color mixed sepia and tawny, suffused with rusty on rump and hind limbs; dorsal area clothed by two sorts of hair, long wholly sepia ones, and slightly shorter ones,

with a broad subterminal band of buff; sides of head and body slightly lighter and lacking the long dark hairs, buffy rather than tawny in tone; limbs colored like the body; ears clothed with short, chiefly buffy hairs, showing narrow dark annulations; underparts vermiculated buffy and hair-brown, the individual hairs all tipped by a broad band of buff; chin and lips whitish; tail rusty at base, clothed above by tawny hairs, and below by buff ones.

Measurements.—Head and body, 370 mm.; tail, 115; hind foot, 61; ear, 29. Skull: greatest length, 71; condylo-incisive length, 63; basilar length, 55; zygomatic breadth, 45; interorbital constriction, 21; nasals, 24 x 12; palatilar length, 28.5; diastema, 15; palatal foramina, 8.5; maxillary toothrow, 15; condylo-incisive length of mandible, 46; coronoid-angular depth, 25.

Four specimens of this new race are in the collection, two of these are from the type locality, and the others are from Maji-ya-chunvi. It is a very small form, and confined to the desert country flanking the moist coast belt.

The large, widespread species, *T. swinderianus*, occurs in the littoral zone at the mouth of the Tana River, and no doubt extends southward along the coast to the cape region. There is at present, however, no record of its actual occurrence with the races of the smaller species allied to *gregorianus*.

LEPUS RAINEYI, new species

MARSABIT HARE

Type from Longaya Water, 30 miles south of Mt. Marsabit, British East Africa; adult female; number 181808, U. S. Nat. Mus.; collected by Paul J. Rainey, July 21, 1911; Heller number, 3061.

Characters.—Most closely allied to *crawshayi*, from which it differs in lighter coloration and lack of tawny on sides of body and rump; differs from *somalensis* by absence of vinaceous suffusion; general body color similar to *salæ*, but feet buffy with fulvous pads, not white with drab pads, as in that species.

Coloration.—General dorsal coloration buffy-gray, lined with black, the black heaviest over mid dorsal line; rump and sides purer gray, without any buffy suffusion; nape and feet ochraceous, the pads fulvous; head tawny-ochraceous, lined sparingly with black; ears ochraceous, edged on inner margin by long buffy fringe, the extreme tip blackish and the outer side at base bordered by white; underparts white, the hair white to the roots, except on the throat,

which is crossed by the broad buffy neckband; tail white, the dorsal surface with a wide black stripe extending from base nearly to tip.

Measurements.—Head and body, 480 mm.; tail, 95; hind foot, 105; ear from notch, 115. Skull: greatest length, 88; condylo-incisive length, 77; basilar length, 67; zygomatic breadth, 42; interorbital constriction, 17; nasals, 36.4 x 19; palatilar length, 31.4; palatal foramina, 22; diastema, 24; maxillary toothrow, 15; condylo-incisive length of mandible, 69.4; coronoid-angular depth of mandible, 39.

In the desert about Marsabit this hare was found in abundance living in the open sandy country, relying upon its pale coloration for protection, and not on cover like the highland race.

LEPUS KAKUMEGÆ, new species

KAKUMEGA HARE

Type from the Lukosa River, Kakumega Forest, British East Africa; adult female; number 181809, U. S. Nat. Mus.; collected by Edmund Heller, February 12, 1912; original number, 5644.

Characters.—Ears much shorter than *victoriae*, less than 90 mm. from notch; pelage long and heavy, suffused extensively with tawny; black dorsal tail stripe covering whole upper surface of tail to the extreme tip, not white bordered and white tipped as in *victoriae* and its allies.

Coloration.—General dorsal coloration raw sienna, heavily black lined over the greater part of the dorsal area, except on rump and sides, where tawny-ochraceous predominates; nape ochraceous-rufous; crown of head like back, showing considerable black; orbital region clear buffy without any darker vermiculation; ears darker than dorsal area on upper surface, black predominating over tawny, the fringe on inner border mixed black and tawny; extreme tip black, the outer border at base white; limbs tawny, the pads tawny-olive; belly and chin white, the hair white to the roots; throat and chest tawny, merging gradually on sides into the more rufous nape and forming a conspicuous wide neckband; tail white below, the whole dorsal surface covered by a wide black mantle from base to tip.

Measurements.—Head and body, 460 mm.; tail, 110; hind foot, 105; ear from notch, 88. Skull: greatest length, 91; condylo-incisive length, 78.6; basilar length, 68; zygomatic breadth, 41.6; interorbital

constriction, 18.4 nasals, 40 x 19; palatilar length, 32.4; palatal foramina, 23; diastema, 24.4; maxillary toothrow, 15.4; condylo-incisive length of mandible, 69.6; coronoid-angular depth of mandible, 40.

The type is the only specimen secured. Hares were only seen in the grassy glades and open hill-sides, on the upper edge of the forest at the base of the Nandi escarpment.